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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/217,183	12/21/1998	VERNE C. HORNBECK	98-027	8652

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EXAMINER	
LAUCHMAN, LAYLA G	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 03/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/217,183	HORNBECK ET AL.
	Examiner	Art Unit
	L. G. Lauchman	2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 27-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-12 and 27-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s) _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-12, 27-29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an optical waveguide having a graded index of refraction within an integrated circuit, does not reasonably provide enablement for the graded index of refraction. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. The term "graded index of refraction" is a well-established term in the art for an index of refraction continuously varying within the same material, or within layers of different materials fused together. However, in the application, the graded index of refraction has a different meaning: the indices of refraction are varied in a step-wise relation. Each material—the dielectric material, refractive layer, and core—has its own constant index of refraction, and there is no evidence of a gradual change of the index of refraction.

In the reference "Fiber Optic Reference Guide" by Goff (cited in the PTO-892 form, paper N. 16), please find a definition of graded-Index Fiber (page 21).

Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention." Multiform Desiccants Inc. v. Medzam Ltd., 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998). The applicants definition of the graded indices of refraction does not reflect the generally accepted meaning of graded index of refraction, which refers to gradually decreasing of the refractive index

from the center of the core. None of this was found in the specifications. On the contrary, the applicant places the word graded in quotes (see page 15, line 4), therefore admitting the made-up conception.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 11, 12, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al (5,281,305).

As to Claims 1-4, and 12, Lee teaches an optical waveguide that has one layer of dielectric material 10 (silicon dioxide) positioned on a substrate (not shown in Fig. 1) defining a trench 16 (Fig.2) having side walls, the dielectric material having index refraction; a refractive layer 18 of optically transmissive material (borosilicate glass) adjoining the side walls within the trench and conforming to the side walls, the refractive layer having an index of refraction; and a core 20 (PSG-phosphosilicate glass) of optically transmissive material adjoining the refractive layer within the trench and conforming to the refractive layer (Fig.6), the core having an index of refraction. The refractive layer surrounds the core except on one side; and the dielectric material 23 (Fig.6) contacts the core on the one side where the refractive layer does not surround the core. The refractive layer 18 is U-shaped and surrounds the core except on the one side. Fig. 8 shows that the borosilicate layer (18 and 28) completely encircles the core PSG. A cap 28 of the refractive material 28 (see Fig. 9) extends across the one side of the core 20 between the ends of the U-shaped refractive layer 18. The cap 28 has

essentially the same index of refraction as the U-shaped refractive layer 18; and the cap and the U-shaped refractive layer encircling the core 20.

Although the patent does not specifically disclose that the index of refraction of the core is greater than the index of refraction of the refractive layer, and the index of refraction of the refractive layer is greater than the index of refraction of the dielectric material, this feature is seen to be an inherent teaching of that device since the refractive layer of Lee's apparatus, which is made of borosilicate glass, has greater index of refraction than the index of refraction of the dielectric layer made of silicon dioxide (see Duke Scientific Corporation, Technical note –007 B, December 1, 1996). As to the refractive index of the core 20, it has to be greater than the refractive index of the refractive layer, otherwise it would not be able to guide light (See Fiber Optic Reference Guide by David Goff, second Edition, Chapter 3, p 21, Multimode Fiber; Patent N. 5,235,663, N 5,562,838, N. 5,604,835, N. 4,744,623, N 4,146,298). The index of refraction of a core is greater than the index of refraction of the cladding material surrounding the core, therefore in the patent of Lee the index of refraction of the core 20 is greater than the index of refraction of the reflective layer.

As to Claim 11, the refractive layer 18 is deposited within the trench.

As to Claims 27-29, the core 20 is deposited within the refractive layer 18, and the core 20 and the refractive layer 18 are located within the trench.

Conclusion

Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to TC 2877 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center number is (703)308-7722 or 308-7724.

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and

b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to L. G. Lauchman whose telephone number is (703) 305-0071.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC receptionist whose telephone number is (703) 308-0956.

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3/3/03/lgl

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